Co-Design for the Development of New Knowledge and Practices in Not-for-Profit Organizations

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This article focuses on a specific form of collaboration between academic researchers and practitioners: co-design. Generally, the strategic use of co-design is considered to be beneficial because, among other reasons, it better aligns outcomes to user needs. In addition, active stakeholder participation engenders new network developments and strengthens existing links. Despite this, the extent to which the co-design approach could be used to foster new knowledge and/or practices is hardly explored. Thus, our research applied co-design methods to organizational practices and examined how they may bring about benefits for academic researchers and practitioners collaborating in the context of not-for-profit organizations. According to our findings, all stakeholders considered co-design to be useful, as it helped them achieve desirable outcomes in a more inclusive and collaborative manner. The findings confirmed a number of benefits, among them confidence building. The size of organizations did not appear to affect the process or the outcomes. While most knowledge co-created through these types of projects tends to be practical in nature, new theoretical knowledge was generated through critical examination of the process/results as well as through individual/group reflection. We consider this aspect to be particularly useful for other researchers and practitioners interested in applying co-design principles to the not-for-profit sector.

Key words: co-design, not-for-profit organizations, co-creation of knowledge

Introduction

This research seeks to establish how new practical and theoretical knowledge could be created through collaborative design/co-design. For our purposes, co-design is defined as "the creativity of designers and people not

trained in design working together in the design development process" (Sanders and Stappers, 2008, p. 6). Co-design is widely adopted in the commercial sector because involving potential users and other key stakeholders in the design process can help augment customer understanding and satisfaction. In addition, it accelerates user acceptance and reduces the possibility of failure. The public sector also uses co-design as a way of engaging audiences and enhancing transparency. We hold that co-design has the potential to support the not-for-profit sector, as it excels at increasing stakeholder engagement, which could lead to higher productivity, higher creativity, and lower costs and risks (Ramaswamy and Gouillart, 2010).

Our research aimed to explore benefits of the strategic use of co-design beyond commercial gains and stakeholder engagement. We investigated the potential benefits of co-design, mainly focusing on knowledge development. The rationale for this was based on the relatively low level at which co-design is explored as a way to foster new knowledge and practice and the lack of meaningful discussion of the organizational effects on co-design processes and outcomes. Our study focuses on the co-creation of knowledge and practice between academic researchers and practitioners in the not-for-profit sector, which has become increasingly relevant in light of recent encouragement from research councils in the United Kingdom and other funding bodies. Finally, we considered how co-design benefits both academic researchers and practitioners in not-for-profit sectors.

Background research

Collaborations have been recommended as a suitable means for not-for-profit organizations (NPOs) to build capacity and increase efficiency in service delivery (House of Commons Public Accounts Committee, 2009). In other words, strategic use of co-design could potentially help NPOs to improve their capacity and efficiency, especially when they work with users and other stakeholders to create new solutions/services.

Experts have pointed out that the true benefits of a co-design approach may lie in the engagement with the design process rather than the creative outcomes themselves (e.g., new products/services). For example, Sanders and Simons (2009) argued that engagement in the co-design process could encourage people to ask open-ended questions that fuel further explorations; enhance the creativity of participants through active interactions with people from different disciplines and/or demographic groups; and build empathy among co-creators, thereby strengthening their relationships. Engagement in this type of collaboration could also lead to valuable social impacts, such as encouraging self-help attitudes and behavioral changes and growing social networks (Boyle and Harris, 2009). At the individual level, engagement in co-design could fulfill people's needs for creative experiences (Sanders, 2006).

Knowledge development is an integral part of the design process. Cross (1982, 2001) observed that design disciplines have developed distinctive ways of generating knowledge, such as reflective practice and abductive reasoning. The goal of abductive reasoning, which is one of the key characteristics of design thinking, is not to declare whether a conclusion is true or false (Martin, 2009) but rather to create plausible explanations of a given situation. Dorst (2010) explained that designers' goal-oriented nature often forces them to adopt a problem-solving approach that generates a "working principle" to ultimately bring about the end value they aim to achieve. The process of framing and reframing problem situations, which requires data collection, analysis, and synthesis, leads to the creation and evaluation of new knowledge.

In many ways, the development of knowledge and practice through the design process is relatively similar to Kolb's experiential learning theory wherein the learning cycle can be divided into four stages: Concrete Experience (CE), Reflective Observation (RO), Abstract Conceptualization (AC), and Active Experimentation (AE) (see Figure 1).

A learner learns by experiencing a new phenomenon, reflecting upon that experience, conceptualizing what he or she has experienced into new knowledge, and then applying what

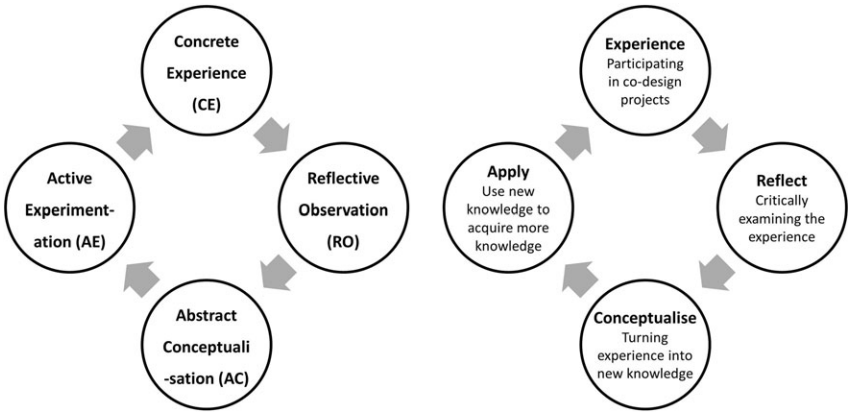

Figure 1. Experiential Learning model (Kolb, 1984).

he or she has learned to acquire further knowledge. In the co-design process, participants, especially those from nondesign backgrounds, could develop new knowledge about design by experiencing the co-design process; reflecting on their experience, conceptualizing what they experienced in terms of the process (e.g., how to frame questions, develop ideas, prototype and test ideas, and implement ideas into reality); engaging in interactions with other co-creators; and, finally, gaining sufficient knowledge and confidence to apply the co-design process they have learned to solve problems in different contexts.

Co-design could provide an alternative means for NPOs to build capacity and increase efficiency in service delivery by working with users and other stakeholders. To illustrate this point further, this article critically compares three case studies to identify similarities and differences in the effects of co-design. All projects involved the use of the co-design approach as a means of co-creating knowledge and practice within NPOs. Different types of organizations were selected so that the institutional effects on co-design processes and outcomes could also be examined.

Case Study 1: Co-creation of knowledge with community-based organizations

This case study discusses the co-creation of knowledge and practice that occurred as part of the research project funded by the Arts and Humanities Research Council (AHRC) under the Connected Communities Scheme. The study aimed to explore how co-design and co-production could assist a community in identifying and unlocking underutilized assets in their community to create solutions that matched their needs and aspirations in a sustainable and inclusive manner. In this case, academic researchers worked with a number of community-based organizations, which are defined as small NPOs operating on a voluntary basis in a single community, for example, a volunteer group. The study was underpinned by the asset-based community development (ABCD) concept, which argues that to achieve sustainable developments, communities should be developed based on their inherent strengths and potentials (Kretzmann and McKnight, 1993). In this case, the term *asset* refers to a wide range of tangible and intangible resources, for example, skills and physical facilities. It was proposed that by taking participants through the creative processes of co-design and co-production, they would gain the skills and the confidence to identify these kinds of assets and put them to good use in a way that satisfied their needs.

The project contained four subprojects, which were carried out simultaneously with four communities in the United Kingdom. According to the funder's requirements, the research agendas, methodologies, and outcomes had to be co-created by academic investigators, project partners (practitioners working in related fields), and community partners (representatives of the four communities that took part in this project). Thus, the co-design approach was used throughout the project. Moreover, the roles of community-based organizations were considerably active. Examples of subprojects are presented below to demonstrate how the strategic use of co-design can lead to the co-creation of new knowledge and practice.

Subproject 1: Picture of health

The first subproject focused on co-designing a public health agenda with communities in Stoke-on-Trent. This subproject consisted of three creative workshops, which were co-designed and co-led by one academic investigator and three practitioners from Kindle Partnerships and the New Vic Theatre Borderlines. The workshops successfully attracted a wide range of community members, including hard-to-reach groups such as people from lesbian, gay, bisexual, and transgender communities and older people. The creative approach known as "Cultural Animation" was employed to help people explore how the current top-down public health agendas could be redesigned from the people-centered perspective.

In the first workshop, theatrical techniques (e.g., storytelling) were employed to develop and present three community health scenarios, (see Figure 2), which helped to trigger people's thoughts about their own health issues. Participants were actively engaged in the creative process, as they were asked to develop solutions for these various scenarios. In the second workshop, the experience of engaging in the creative process was developed further, as participants were asked to co-design and visualize virtual communities to enhance the well-being of older people in their communities. In the last workshop, participants were asked to act out how they might present their ideas to other stakeholders. While the first two workshops provided creative experiences, the final one helped participants build the confidence to take their ideas one step further. This project did not focus on identifying underutilized tangible resources (e.g., green spaces) but concentrated instead on helping people recognize themselves as assets of communities. This self-recognition is crucial for future and ongoing personal development.

Subproject 2: A case for soft play

The second subproject focused on co-designing a case for soft play provision in Tidworth. This subproject was a collaboration of one academic investigator, four practitioners, and two representatives of Tidworth Mums. Tidworth Mums is a group of volunteers who aim to improve the well-being of people with children in Tidworth and the surrounding areas. The group already had a vision for a new soft play center for local families. Thus, this subproject aimed to investigate how that vision could be realized.

First, the asset-mapping technique, as developed by Open University and Glass-House Community Led Design, was carried out with the key members of the group and their existing partners, Wiltshire Council and Army Welfare Service, to make all existing assets visible. In this way, the core aims of this subproject were co-created. Second, a play study tour was arranged to help the group develop their ideas further. Next, a Mega Soft Play Day (which attracted 275 children and 158 parents) was coordinated by Tidworth Mums together with an online survey to engage with wider audiences in their area. These activities helped them test their idea of more flexible play where children of different ages and parents could interact, better understand local views on play, build evidence to support their case, and get more local families behind the initiative.

Like subproject 1, this project did not focus on identifying underutilized tangible resources but concentrated on helping people recognize themselves as assets of communities. The engagement with the co-design process in this case has helped the community group develop new knowledge and practice (e.g., how to test ideas in a fun and engaging way), which not only advances their ideas but also strengthens their case and purpose.

Subproject 3: Shinfield Rise community engagement

The third subproject addressed the aspiration of Shinfield Rise, which aims to connect with all groups of residents and help them recognize themselves as assets. Hence, this subproject focused on co-designing and co-producing community engagement activities to attract disengaged members and encourage them to become more involved in community activities. Four community engagement activities were co-created by one academic investigator and three project partners who represented this community.

The first activity, an asset-mapping exercise, was employed to help people discover assets in their

area. Fifteen local residents who took part were asked to affix stickers or draw pictures that represented assets on the Shinfield Rise map. Through this exercise, a variety of assets were discovered, for example, musical skills. The results from the first activity confirmed that people are indeed the principal assets of this area. Hence, the second and third activities were designed to get people to see themselves as assets and become more involved in shaping their community. Local children were asked to investigate their area further by photographing what they considered to be assets and using these pictures to create a Shinfield Rise version of a Monopoly board. Value was assigned to all assets presented on the board (e.g., friends and local facilities). These activities revealed that people truly valued community facilities and key people (e.g., community development workers). The results led to an exploration on how to use community facilities and strengthen existing relationships between residents and key community members. Finally, a community garden project was chosen due to its potential to foster wider and more meaningful community involvement. Seven residents devoted their personal time to designing this garden. The engagement with the co-design process effectively turned many passive residents into active members of the community. Creative tasks also allowed people to appreciate their own creativity, allowing them to see themselves as community assets. Like subproject 1, this study helped people develop self-recognition, crucial knowledge for future personal development.

Figure 2. Examples of the co-designed outcomes. [Color figure can be viewed at wileyonlinelibrary.com]

Summary of Case Study 1

The study showed that the strategic use of co-design throughout the project generated myriad opportunities for the co-creation of new knowledge and practice. All parties considered the co-design approach to be useful, as it helped them plan research agendas, design activities, and achieve desirable solutions in a collaborative manner.

Most knowledge co-created through this project was practical in nature, which is useful for researchers and practitioners alike. While practitioners found new practices that they learned through co-design to be valuable for their professional work, most participants found the change of mindset and self-recognition to be the most profound aspect.

Using Kolb's Experiential Learning Theory to evaluate the co-creation of new knowledge and practice that might take place in this study, we can conclude that all four stages of knowledge development took place in this case (see Table 1). Participants actively engaged in planning the research and the carrying out of the research activities. They regularly reflected on their experience, which enabled them to turn their experiences into new knowledge. They all reported that they were interested in applying the

	Academic Investigators	Practitioners (Project Partners)	Participants (Communities)
Concrete Experience	Actively participate in the planning, execution, and development of research outcomes	Actively participate in the planning, execution, and development of research outcomes	Actively participate in project activities and partially contribute to the outcome's development
Reflective Observation	Reflect on the process, personal experience, and the research outcome	Reflect on the process, personal experience, and the research outcome	Reflect on personal experience and the research outcome that they helped develop
Abstract Conceptualization	Develop practical knowledge through reflection	Develop practical knowledge through reflection	Develop self-recognition through reflection
Active Experiment	Apply the new knowledge to other academic research and teaching activities	Apply the new knowledge in other settings, (e.g., professional practices)	Use confidence gained through this study to engage in other creative activities
Knowledge Development	Personal and organizational levels	Personal and organizational levels	Personal level

Table 1. Summary of the knowledge co-created through Case Study 1.

knowledge and practice they obtained through this project in different contexts.

Case Study 2: Co-creation of knowledge with small and medium-size (SME) NPOs

This case study discusses the co-creation of new knowledge and practices that might occur as part of the research project funded by the AHRC under the Connected Communities Scheme. The study aimed to determine the perceived and potential value of co-design for SME NPOs and how best to use co-design with their audience (or service users) to deliver better services at lower costs. The rationale was that most SME NPOs find it challenging to deliver high-quality services to their clientele due to limited resources (e.g., a small number of staff). Strategic use of co-design could turn their service users —in other words, the people whom they intend to help—into their partners. By co-designing services directly with their audience, SME NPOs could avoid unnecessary expenses and boost user satisfaction, effectively delivering better services at lower costs. Moreover, they could receive valuable help from their users as a direct result of treating them as contributing partners rather than as passive recipients. Additionally, co-design's human-centered approach and creative focus could help service providers develop new innovations and improvements to their core mission (Yu and Sangiorgi, 2018).

The aim was fully developed at the proposal stage by two academic investigators in consultation with two practitioners from the National Council for Voluntary Organizations (NCVO), United Kingdom. The research involved

- One online questionnaire that was distributed to charities and voluntary organizations nationwide (49 respondents in total)
- Three semi-structured interviews with select survey participants who indicated that they were willing to answer further questions
- Five case studies with SME NPOs (three small charities, one medium-size charity, and one community-interest company)
- One creative workshop with key stakeholders; to ensure a balanced mix of participants, half of the participants (eight delegates) were recruited from third-sector organizations while the other half (seven delegates) were recruited from academia, including co-design researchers and academics from related fields, for example, inclusive design

Because SME NPOs were not involved in the development of the aim and research methodology, the

opportunities for the co-creation of knowledge between academic researchers and practitioners appear to be fewer than in Case Study 1. Subsequently, the practitioners' main role was to provide data and advice. The survey results show that most participants (59.1 percent) had heard of the term *co-design* before. However, only a handful (15.9 percent) reported having previously used this approach in their organizations. Although most organizations valued their users' input, they did not typically involve them directly in the service design process. Service users were more often consulted at the beginning of the process (to identify problems and gather ideas) and at its conclusion (to evaluate the results). Most participants did not show good understanding of co-design and the service design process because they rarely worked with designers. Thus, they tended to value technical skills with which they were less familiar, for example, website design. As a result, they did not demonstrate a solid understanding of the value of design thinking and the design process. The semi-structured interviews confirmed that SME NPOs were not familiar with the co-design process, as they preferred to give users alternative options to choose from rather than involve them in the service design process due to limited resources and capacity.

The case studies revealed that the size of the organization does not directly impact the viability of co-design approaches. For example, an organization that had only one full-time employee had successfully applied co-design to develop and deliver services with their users. Organizations that have successfully applied co-design tend to have the formal service development process in place, whereas those that do not use the co-design process and/or the service design process often develop services in an ad hoc manner, relying on frontline staff/volunteers to obtain user feedback and ideas.

Opportunities for the co-creation of new knowledge and practice came at the end of the project in the form of a creative workshop designed to disseminate principal findings of the study to key stakeholders, identify and discuss key issues emerging from the research findings, and co-create the co-design guidance for SME NPOs. The workshop began with mini case study presentations from three SME NPOs that made good use of the co-design process. Next, participants were divided into three groups of five to discuss key points that arose from the presentations and share their reflections on previous collaborations they had initiated with their service users. Finally, participants were asked to suggest what form of support SME NPOs would find most helpful to build skills and confidence in co-designing services with their service users. Key findings include the following:

- Group 1 identified listening, speaking user language, and enjoyment as key considerations. They suggested that suitable props should be developed to help SME NPOs adopt the co-design process and engage with users in a fun and meaningful way. The rationale was that playful activities could unlock users' creativity and make them more interested in co-designing services.
- Group 2 identified stakeholders and commitment as key considerations. They suggested that a simplified co-design process and set of tools should be developed to help SME NPOs get started. The rationale was that these organizations could start with the simplified process and continually refine the steps to suit their needs.
- Group 3 identified engagement, design expertise, and ongoing development as key considerations. They pointed out the need to help SME NPOs identify available design support, for example, pro bono design services. This group showed interest in exploring possibilities of getting designers to work with SME NPOs to help them develop a better understanding of the design process.

The results from the creative workshop led to the co-creation of the co-design toolkits, a set of co-design case studies, and a series of short videos between academic researchers and practitioners (see Figure 3). The co-design toolkits were co-created with NCVO staff based on the guideline entitled "Design Methods for Developing

Figure 3. A series of short videos co-created by researchers and practitioners. [Color figure can be viewed at wileyonlinelibrary.com]

Services," developed by the Design Council and Technology Strategy Board (2011). In keeping with the Double Diamond model (Design Council, 2007), they comprise four sets of simplified co-design tools for four stages in the design process (Discover, Define, Develop, and Deliver). All tools were written from NPOs' perspectives and accompanied by relevant examples from the not-for-profit sector. The toolkits were made available on the NCVO forum together with three case studies, which were co-created with three SME NPOs. These case studies present different co-design processes developed and used by three SME NPOs to co-design services with their users. Nine short videos showcasing successful co-design projects with service users were also co-created with four SME NPOs and made available on YouTube. The rationale behind this was that it would be easier for SME NPOs to learn and apply practices employed by similar organizations.

Summary of Case Study 2

The co-creation of new knowledge and practice in this case was rather limited. This is probably because the strategic use of co-design was only applied at the end of the project. Moreover, the research tools employed (e.g., questionnaire survey) did not meaningfully support the co-creation of knowledge. Nevertheless, practical knowledge was captured through reflections and creative tasks in the creative workshop. Moreover, the co-production of the toolkits, case studies, and videos enabled the researchers and practitioners to conceptualize the practical knowledge gained (e.g., how to recruit service users to co-create services in a democratic manner).

By adopting Kolb's Experiential Learning Theory to evaluate the co-creation of new knowledge and practice observed in this study, we may conclude that only two stages of knowledge development (reflective observation and abstract conceptualization) took place for participants (see Table 2). Participants reflected on their experiences, captured good practices, and turned their practical knowledge into useful materials (e.g., guidance and case studies) that could be disseminated to other SME NPOs and other key stakeholders. The limited engagement in co-design activities may have prevented knowledge development at a personal level, for example, self-recognition. Most knowledge generated through this project focused instead on the practical application of co-design, for example, the simplified process and tools.

Case Study 3: Co-creation of knowledge with large not-for-profit organizations

The aim of this co-design project was to develop a system of work suitable for large cultural organizations that seek greater commercial efficiency and income generation from sources other than public funds. The system set out to combine multiple co-design methods, tools, and processes with knowledge assets and academic research in the areas of design management, marketing, brand management, and communication. In this case, Tyne and Wear Archives and Museum (TWAM) marketing and donations

	Academic Investigators	Practitioners (Project Partners)	Participants (SME NPOs)
Concrete Experience	Actively participate in the planning, execution, and development of research outcomes	Actively participate in the planning, execution, and development of research outcomes	Limited opportunities to engage in creative activities and the co-creation of outcomes
Reflective Observation	Reflect on the process, personal experience, and the research outcome	Reflect on previous experience and capture good practices to share with others	Reflect on previous experience and capture good practices to share with others
Abstract Conceptualization	Develop practical knowledge through co-design activities	Develop practical knowledge through co-design activities	Turn previous experience into knowledge
Active Experiment	Apply new knowledge to other academic research and teaching activities	Apply new knowledge in other settings (e.g., professional practices)	Limited evidence to suggest how participants might use new knowledge
Knowledge Development	Personal and organizational levels	Personal and organizational levels	Personal and organizational levels

Table 2. Summary of the knowledge co-created through Case Study 2.

employees collaborated with a team of academic staff and postgraduate students of the School of Design at Northumbria University.

The co-design project was treated as a specific context for the development and validation of a system of work that could be replicated. The academic researchers' team collaboration with employees/practitioners focused on TWAM's commercial context, marketing communications, and brand equity with respect to Newcastle's Discovery Museum's potential for generating income through donations, shops, merchandising, the use of social media, and the enhancement of experiential factors. It is worth mentioning that TWAM is the major northeast-based regional museums group, managing 10 different museum venues, archaeological sites, and archives, welcoming over 1.5 million annual visitors. In other words, Northumbria's team had a great opportunity to jointly work with practitioners of a large organization with vast knowledge and influence in the region.

The project

Many cultural organizations are currently facing significant spending cuts and struggling to generate the kind of income that can ensure continuous and satisfactory function and programming. For example, museums that receive funding from the government and are therefore unable to charge an entry fee have begun to rely more heavily on memberships, donations, funding from private charities, events programming, and hiring their venues out for private functions. In each of these instances, success is linked to the museum's reputation, built upon people's perceptions of its brand, and therefore calls for even more robust marketing communications.

The co-design brief main question

How could TWAM encourage more donations from visitors to the Discovery Museum, both on site physically in the museum and also online, through the website and social media channels? To develop ideas and explore their value for the organization, the practitioners and the academic team considered various elements, among them:

- The role of design in adding an aura of quality and innovation and in creating experiences that people would value and hope to repeat.
- The role of co-design in leading to better-defined solutions and a more strategic approach to solution-oriented design.
- The visitor journey—what point during the visitor's experience at the museum represents the ideal opportunity to promote donations and make requests?
- The audience—who should Discovery be targeting? Should the approach be different on the

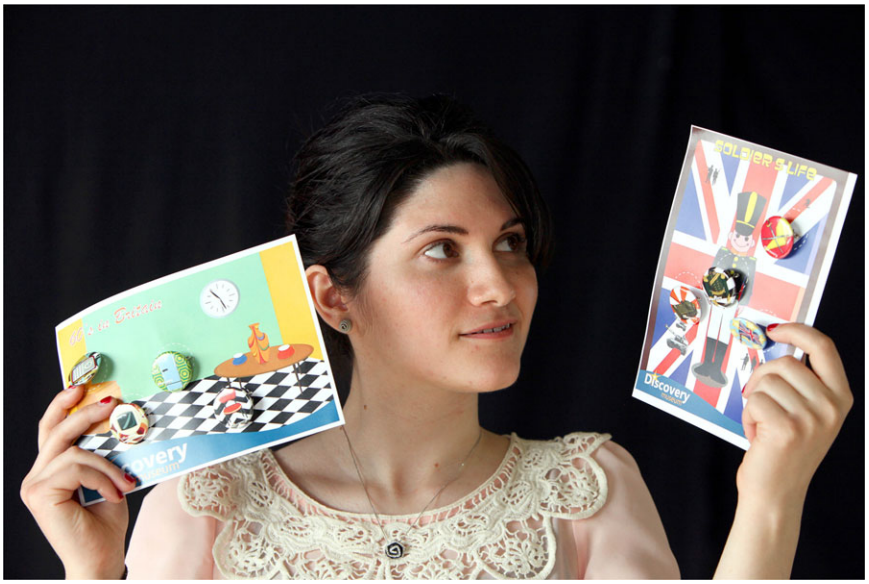

Figure 4. Examples of the co-designed solutions. [Color figure can be viewed at wileyonlinelibrary.com]

basis of whether children are present in the visiting group?
- The message—what sort of message is important to visitors or particular target markets? What message would more likely prompt them to donate?
- The museum's current approaches toward asking for donations. What different methods do they use and how could we expand on those?
- The role that visitors/audiences would or could play in the sustainability of the museum (people feeling directly responsible for supporting it, as opposed to taking its services for granted).
- The role of museums versus the role of their commercial environments (e.g., raising income via corporate social responsibility and corporate sponsors).

All these aspects had to be addressed in a way that integrated brand value. In their approach, the practitioners and the academic team were expected to highlight the ways their ideas connected with or drew on "The Brand." In the context of the Discovery Museum, there are several brands that coexist and influence each other. These are the brand of TWAM as the parent organization under which the Discovery Museum brand exists; the brand of each individual exhibition; or even some particularly reputable exhibits, such as the ship *Turbinia*. The co-creators were expected to explore what connects visitors to these brands, discuss which of the brands were likely to be more successful, and define how they could be used as the center of gravity around which to build donation strategies and focus communications. TWAM offered generous access to its venues, data, interviews, collaborative workshops with employees, and ongoing exchange of cooperative approaches to multiple aspects of projects such that the academic researchers' team was able to fully explore its environment and brand hierarchies; develop suitable ideas; and, finally, suggest a series of solutions to the question posed.

The co-designed solutions

Thirteen solutions were produced and presented in the context of a networking event and showcase exhibition. Solutions included a lottery installation placed in the Newcastle city center, inspired by the idea of taking the brand outside of the museum space. Another idea involved engagement with the museum's website and subsequent participation in future events in the museum. This included virtual games as well as games that could be played physically in the venues and models of innovative donations boxes, which did not look like boxes at all, such as one inspired by our city's Millennium Bridge (just as the bridge swings to allow boats to pass underneath, the model's bridge swings into action when enough coins have been dropped inside). Finally, another concept was aimed specifically at young collectors, inviting them to buy and collect badges bearing direct links to exhibits in the museum (see Figure 4).

The event

Finally, the co-design team showcased these solutions in the Great Hall Gallery of the Discovery Museum in the context of an exhibition and networking event

with local stakeholders and professionals from prominent cultural and creative enterprises in the region, many of which were not themselves museums. Specifically, in addition to the museums of TWAM, the event was attended by Theatre Royal, The Sage Music Hall, The Baltic Contemporary Art Foundation, the Seven Stories Children's Book space, the City Council Library, local art galleries, and more. With these organizations, the academic researchers' team was able to share various methodologies and solutions that could be replicated to potentially improve their own co-design, entrepreneurial, and fundraising performance. This event saw and effectively consolidated the creative team's collaborative capacity.

The co-design system of work

In this case, the system is the result of capturing and articulating as clearly as possible a set of practices and knowledge produced by co-creating and co-designing these solutions. More specifically, the academic researcher team, by working closely with TWAM practitioners and employees, provided an opportunity to develop a series of assets and new practices of co-design that could be replicated within TWAM and in other large cultural organizations.

Applying Kolb's Experiential Learning Theory to evaluate the co-creation of new knowledge and practice observed in this study, we may conclude that all four stages of knowledge development took place in this case because both TWAM and the academic researchers team worked collaboratively throughout the entire project. However, we do not see quite enough evidence of reflective observation in TWAM (see Table 3). This is because the stages included in the project did not allow for investigating their current donation situation to provide future practical solutions. Hence, the articulation of new knowledge and practice occurred mainly at the organizational level rather than at the conceptual/theoretical level.

Discussion and conclusion

This article discusses the potential benefits of the co-design approach from a knowledge development perspective. Both the literature review and case studies' findings demonstrate that various types of knowledge and practice can be generated through the strategic use of co-design. Most knowledge generated through collaborative research projects between academic investigators and practitioners tends to be practical knowledge, which is useful for researchers and practitioners alike (e.g., practical guidance). However, other types of knowledge could also be generated through critical examination of the process and results as well as individual/group reflection. Knowledge development can take place at both personal and organizational levels.

Knowledge development at a personal level (e.g., self-recognition) may be considered to be one of the most profound results of engagement with the co-design process because this

	Academic Investigators	Practitioners (TWAM)
Concrete Experience	Active participation in project planning, project execution, and the outcome development and evaluation	Active participation in data collection, solution generation, and outcome development (the system)
Reflective Observation	Reflection on the process, personal experience, and the research outcome	Limited information available at present on how TWAM may reflect on the experience
Abstract Conceptualization	Develop practical knowledge through co-design activities	Develop practical knowledge through co-design activities
Active Experiment	Apply new knowledge to other academic research and teaching activities	Apply new knowledge (the system) in organizational and professional practice
Knowledge Development	Personal and organizational levels	Organizational level (limited information of personal learning available at present)

Table 3. Summary of the knowledge co-created through Case Study 3.

kind of knowledge is unlikely to be generated through other research approaches (e.g., quantitative studies).

The size of the organizations does not appear to affect participants' abilities to engage with co-design or to produce new knowledge. The nature of the co-design project has greater influence on the type of knowledge generated through co-design projects. The open research agendas and the strategic use of co-design throughout the entirety of the project enabled all four stages in Kolb's Experiential Learning Theory to be fulfilled. Research activities with relatively rigid structures may impede opportunities for all parties to co-create new knowledge together.

To maximize opportunities for the co-creation of knowledge through strategic use of co-design, academic researchers and practitioners should ensure that the four stages of the experiential learning model are included in research activities. By making these stages explicit, knowledge development can take place at both personal and organizational levels.

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